

WHAT WE CLAIM IS:

*sub B1* 1. An extracellular portion of the HER2 molecule comprising at least 9 amino acids, essentially free of transmembrane and intracellular portions of said HER2 molecule.

*sub B2* 2. An <sup>isolated</sup> extracellular portion of the HER2 molecule comprising an immune epitope, essentially free of transmembrane and intracellular portions of said HER2 molecule.

*sub B3* 3. The extracellular portion as defined by claim 1, in substantially pure form.

*sub B4* 4. The extracellular portion as defined by claim 1, having a purity of at least about 99%.

*sub B5* 5. The extracellular portion as defined by claim 1, wherein said extracellular portion is antigenic in animals.

*sub B6* 6. The extracellular portion as defined by claim 1, further comprising the entire extracellular portion of said HER2 molecule.

*sub B7* 7. The extracellular portion as defined by claim 1, conjugated with a peptide having immunogenic properties.

*sub B8* 8. The extracellular portion as defined by claim 7, wherein said peptide comprises an immune epitope.

20 9. Isolated DNA encoding the extracellular portion as defined by claim 1, terminating upstream of the portion encoding the transmembrane domain of said HER2 molecule.

25 10. The isolated DNA as defined by claim 9, terminating at least 1 base pair upstream of the portion encoding the transmembrane domain of said HER2 molecule.

11. The isolated DNA as defined by claim 10, terminating about 24 base pairs upstream of the portion encoding the transmembrane domain of said HER2 molecule.

5 12. The isolated DNA as defined by claim 9, wherein said DNA encodes a sequence of at least 9 amino acids of said extracellular portion, and none of the transmembrane or intracellular portions of said HER2 molecule.

*Sub B5* 13. An expression vector comprising the isolated DNA as defined by claim 9.

10 14. The expression vector as defined by claim 13, wherein said expression vector is a virus.

15 15. A cell into which the expression vector as defined by claim 13 has been introduced.

16. The cell as defined by claim 15, wherein said cell is a prokaryote.

17. The cell as defined by claim 15, wherein said cell is a eukaryote.

18. A process for producing an extracellular portion of the HER2 molecule, comprising the steps of:

20 a) ligating the isolated DNA as defined by claim 9 into an expression vector capable of expressing said isolated DNA in a suitable host;

*Sub B6* b) transforming said host with said expression vector;

25 c) culturing said host under conditions suitable for expression of said isolated DNA and production of said extracellular portion; and

*B6*  
*oral*  
~~d) isolating said extracellular portion from said host.~~

19. The process as defined by claim 18, wherein said host cell  
is a prokaryote.

20. The process as defined by claim 19, wherein said prokaryote  
5 is a bacterium.

21. The process as defined by claim 18, wherein said host cell  
is a eukaryote.

22. A vaccine comprising the extracellular portion of the HER2  
molecule as defined by claim 1.

10 23. The vaccine as defined by claim 22, in combination with  
a suitable adjuvant.

c 24. A <sup>composition</sup> vaccine comprising the extracellular portion of the HER2  
c molecule as defined by claim 2 <sup>and an adjuvant</sup>.

15 25. The vaccine as defined by claim 24, in combination with  
a suitable adjuvant.

*add*

*B7*

*add*

*72*